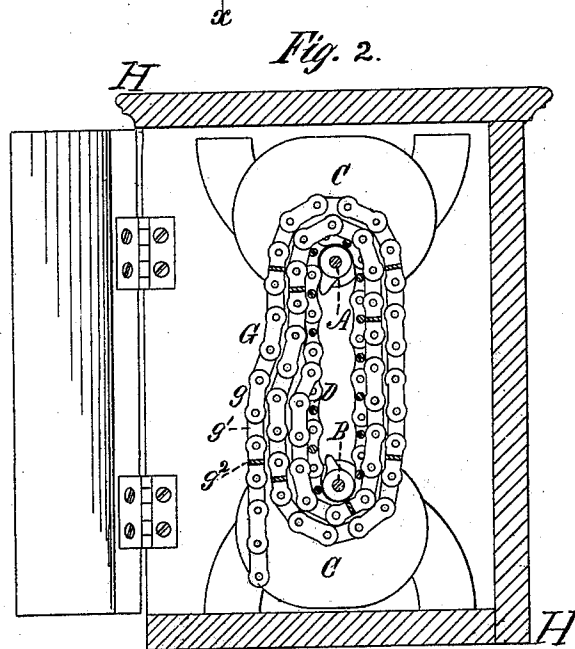
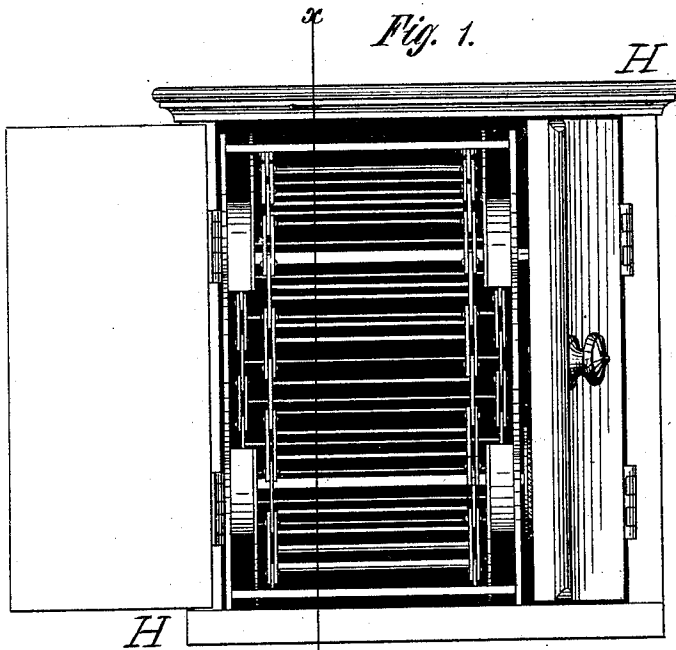


J. R. LEFFERTS.
FIRE-ESCAPE.

No. 170,958.

Patented Dec. 14, 1875.



Witnesses:
John M. Brown
W. H. Thomas

Inventor:
Mr. R. Lefferts.

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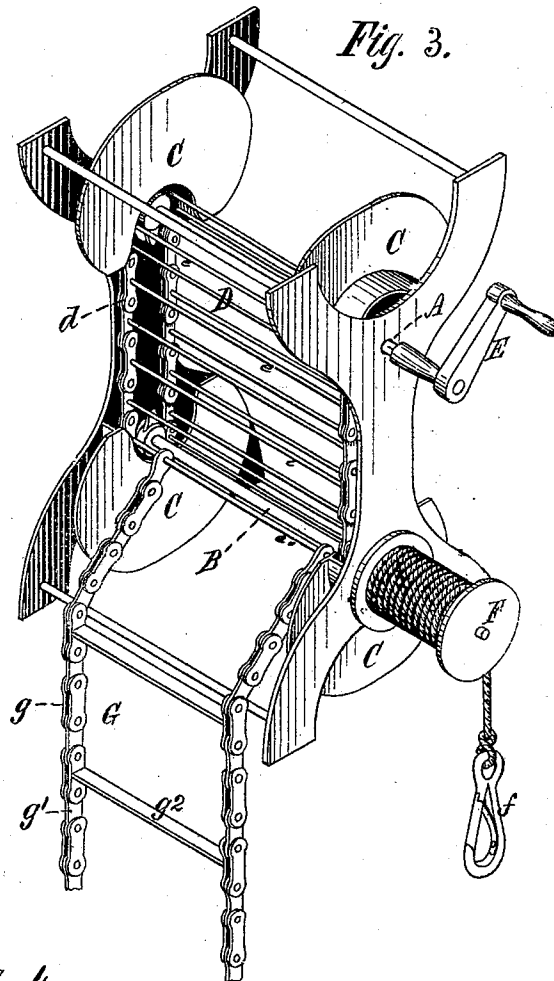
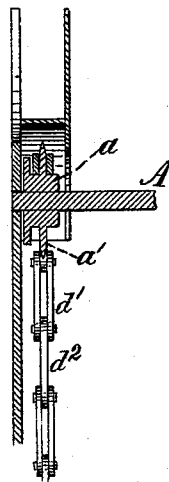


Fig. 4.



Witnesses:

John McBoone.
W. H. Thomas

Inventor:

J. R. Lefferts.

UNITED STATES PATENT OFFICE.

JOHN R. LEFFERTS, OF NEW YORK, N. Y.

IMPROVEMENT IN FIRE-ESCAPES.

Specification forming part of Letters Patent No. **170,958**, dated December 14, 1875; application filed July 2, 1875.

To all whom it may concern:

Be it known that I, JOHN R. LEFFERTS, of the city of New York, in the county of New York and in the State of New York, have invented a certain new and useful Improvement in Fire-Escapes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

This invention relates to an improvement in fire-escapes. The usual form of fire-escapes now in use consists of ladders or stairways fastened upon the outside of buildings, reaching from story to story. These ladders are very unornamental, cumbersome, and expensive, and it sometimes happens that a fire breaks out in the immediate neighborhood of these ladders, and thus renders an escape by them impossible. Outside ladders also afford ready access to burglars.

The object of my invention is to produce a fire-ladder inexpensive, compact, always ready for use, and not liable to get out of order. This ladder can also be moved to the various parts of a building, and an escape free from smoke or flame can always be secured.

My invention is clearly set forth and described in the drawings hereto annexed.

Figures 1 and 2 represent the apparatus in its inclosing case or cabinet. Fig. 3 represents the ladder removed from its case, unwound, and ready for use. Fig. 4 represents a cross-section, showing, in detail, the winding apparatus.

The principle of my invention is as follows: A metallic flat-linked ladder, G, is attached to an endless apron, D, secured within a frame so that it can be wound up into a very small compass by means of a crank, E, or other suitable mechanism. In Fig. 2, which is a cross-section of Fig. 1 on the line *x x*, the operation of the apparatus is clearly shown.

The shafts A and B are provided, at either extremity, with pairs of engaging teeth or cogs *a'*. Passing over these teeth, at either extremity, is a revolving band, D, composed of flat metallic chains. Either of these shafts is revolved by means of a crank or other suitable mechanism, by the operation of which the

apron is revolved and the ladder wound up. The teeth engage with the links of the parts passing over them. These flat-link chain-bands are held firmly apart by means of rods *e e'*, and, with these rods, form an endless apron, over which the fire-ladder is coiled.

In Fig. 4 the manner of the engagement of these teeth with the links of the chain of this revolving apron is shown. To one of the cross-rods *e* of this revolving endless apron my fire-ladder is attached.

The construction of this flexible ladder is clearly shown in Fig. 3. It consists of a succession of flat links, *g g'*, alternately double and single, taking the place of the wood or rope sides of the ordinary ladder. These links move freely on their connecting-pins, and the ladder is thus very flexible. The cross-rods *g²* or steps may be either flat, as in the drawing, or round, the round being preferable. I usually attach these steps to the single links *g'*, instead of the double ones, as in the drawing.

This ladder is made of suitable length to reach from the floor where the apparatus is placed to the ground beneath, and may be provided at its extremity with clamps or other suitable means for attaching it to trees or other firmly-fixed bearings on the ground. Upon turning the crank E the ladder G passes around the endless apron D, and between the side guides C C C, and becomes firmly wound in a small compass. In Fig. 2 it is shown partially wound up. Upon one side of this apparatus is placed a reel, F, with its accompanying coil of rope and snap-hook *f*, for the purpose of lowering valuable articles, or people who are unable to descend the fire-ladder.

The whole of this apparatus is inclosed in a movable cabinet or case, H H, set on casters, which may be handsomely ornamented and prove a desirable article of furniture. In case of fire, this cabinet is wheeled to the nearest window, the ladder is run out by means of the crank F, and a safe, sure, and ready access to the ground is thus secured.

It will probably be desirable to have one of these escapes upon each of the upper floors of a building, so that, in case the passage from one floor to another be cut off, an escape from each floor would be possible.

The particular advantages of this ladder are that, owing to the flatness of its links, it is very firm, compact, and flexible, while, at the same time, unlike the rope or other flexible ladders, it can never decay, and can always be relied on.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the metallic flexible flat-link ladder G with revolving apron or band

D and the winding-crank E, substantially as and for the purposes described.

2. The combination of a fire-ladder and band with the reel and snap-hook, substantially as for the purposes described.

JNO. R. LEFFERTS.

Witnesses:

JOHN MCCRONE,
G. WELD THOMAS.